

Veterinary research on lambs leads to advances in treatments for respiratory disease in human infants

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Veterinary research involving lambs at Iowa State University is helping to advance new treatments to a common virus in humans that sometimes poses a serious threat to newborns.

Mark Ackermann, professor and interim chair of the department of veterinary clinical sciences at Iowa State University, leads the research, which tests experimental medications in lambs that have been infected with respiratory syncytial [virus](#).

The virus infects the vast majority of humans, and it usually results in nothing more serious than cold symptoms in healthy adults. In infants, especially those born prematurely, however, the virus can lead to pneumonia and serious health complications, Ackermann said.

Lambs make a good model for studying the illness in humans for a few reasons, he said. Lambs are roughly the same size as human infants, and the virus replicates well in their respiratory systems. The virus also causes the same kind of damage to the bronchioles – or the tiny airways leading to the lungs – of lambs and infants.

Researchers have made progress studying the virus in rodents and other animals, but the studies in lambs provide additional advantages due to some of the similarities of RSV disease with humans.

"The lambs are an intermediate step between rodents and human trials," Ackermann said. "If there was a better model, you can bet pharmaceutical companies would be using it," he said.

Ackermann's laboratory is currently testing a pair of drugs, one delivered as a nasal aerosol through a mask placed on the [lambs'](#) noses and another administered orally. One drug stops the virus from attachment to the body, while the other prevents viral replication, he said.

There's no vaccine for the virus, and new treatments have developed slowly since the 1960s, Ackermann said.

At that time, a vaccine was developed, but it led to disastrous results during human trials. The vaccine sparked altered immune responses that in some cases resulted in death, and work on the vaccine was delayed for years as a result.

Beyond helping to test new treatments for the virus, Ackermann's research has shed new light on how the virus causes disease and invokes immune responses. The work has led to a better understanding of the factors that lead to severe infection of the lungs in newborn and premature infants, he said.

"Aside from just testing new drugs, we're looking at why and how the virus replicates and how it causes the damage that it does," he said.

Provided by Iowa State University

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